

AMENDMENTS TO THE CLAIMS

Claim 1 (Previously cancelled)

Claim 2 (Cancelled)

Claim 3 (Currently amended): A liquid crystal display device as set forth in claim 2 4,

wherein an area of an aperture portion of said, pixel becomes larger as the distance from said gate signal input portion becomes larger.

Claim 4 (Currently amended): A liquid crystal display device ~~as set forth in claim 2, wherein~~ having a liquid crystal display panel, said liquid crystal display panel comprising:

a plurality of pixels which are disposed in a matrix having rows and columns and each of which has at least a thin film transistor (TFT) and a pixel electrode, each said pixel having an opening defining an aperture ratio;

a plurality of gate signal lines which extend from a gate signal input portion disposed along a side of said liquid crystal display panel and each of which is coupled with said TFT's in a row of said matrix;

auxiliary capacitor portions each additionally coupled with a pixel electrode of one of said pixels, the width of said gate signal line becomes narrower and thereby capacitance of said auxiliary capacitor portions becomes smaller as the distance from said gate signal input portion becomes larger, and

the aperture ratio increasing as the capacitance of said auxiliary capacitor portions becomes smaller;

capacitance of each of said auxiliary capacitor portions is being determined by an area of an opposing portion between a pixel electrode of a pixel and a gate signal line coupled with an adjacent pixel via an interlayer insulating film and a nitride film between said pixel electrode and said gate signal line.

Claim 5 (Cancelled)

Claim 6 (Currently amended): A liquid crystal display device as set forth in claim 2-4, wherein said backlight portion comprises at least one elongated backlight source and a light guide plate which is disposed on the backside of said liquid crystal display panel and which propagates light from said backlight source toward said liquid crystal display panel, said light guide plate comprising printed light scattering portions disposed on a surface thereof for adjusting a distribution of luminance of backlighting.

Claim 7 (Currently amended): A liquid crystal display device as set forth in claim 2-4, wherein said backlight portion comprises an elongated backlight source disposed along the side of said liquid crystal display panel where said gate signal input portion is disposed.

Claim 8 (Previously cancelled)

Claim 9 (Cancelled)

Claim 10 (Currently amended): A liquid crystal display device ~~as set forth in claim 9, wherein~~ comprising:

(a) a liquid crystal display panel having:

a plurality of pixels which are disposed on a TFT substrate in a matrix having rows and columns and each of which has at least a thin film transistor (TFT) and a pixel electrode, each said pixel having an opening defining an aperture ratio;

a plurality of gate signal lines which extend on said TFT substrate from a gate signal input portion disposed along a side of said liquid crystal display panel and each of which is coupled with said TFT's in a row of said matrix;

auxiliary capacitor portions each additionally coupled with a pixel electrode of one of said pixel, the width of said gate signal line becoming narrower and thereby capacitance of said auxiliary capacitor portions becoming smaller as the distance

from said gate signal input portion becomes larger; and an opposing substrate

which opposes to said TFT

substrate while keeping a small gap therebetween, said small gap being filled with liquid crystal; and

(b) a backlight portion for illuminating said liquid crystal display panel from the backside thereof, luminance of backlight by said backlight portion becomes lower as the distance from said gate signal input portion becomes larger, the aperture ratio increasing as the capacitance of said auxiliary capacitor portions becomes smaller, capacitance of each of said auxiliary capacitor portions is being determined by an area of an opposing portion between a pixel

electrode of a pixel and a gate signal line coupled with an adjacent pixel via an interlayer insulating film and a nitride film between said pixel electrode and said gate signal line.

Claim 11 (Currently amended): A liquid crystal display device as set forth in claim 9- 10, wherein capacitance of each of said auxiliary capacitor portions is determined by an area of an opposing portion between a pixel electrode of a pixel and a gate signal line coupled with an adjacent pixel via an interlayer insulating film between said pixel electrode and said gate signal line.

Claim 12 (Currently amended): A liquid crystal display device as set forth in claim 9- 10, wherein said backlight portion comprises at least one elongated backlight source and a light guide plate which is disposed on the backside of said liquid crystal display panel and which propagates light from said backlight source toward said liquid crystal display panel, said light guide plate comprising printed light scattering portions disposed on a surface thereof for adjusting a distribution of luminance of backlighting.

Claim 13 (Currently amended): A liquid crystal display device as set forth in claim 9- 10, wherein said backlight portion comprises an elongated backlight source disposed along the side of said liquid crystal display panel where said gate signal input portion is disposed.

Claim 14 (Previously cancelled)

Claim 15 (New): A liquid crystal display device as set forth in claim 4,

wherein said pixels each correspond to an equivalent circuit comprising:

a drain coupled to a drain signal line, said drain signal line having a gate coupled to said gate signal line;

a source corresponding to said pixel electrode coupled to an opposing electrode disposed on a substrate, said pixel electrode having a gate coupled to said gate signal line, a gap portion between said opposing electrode and said nitride film between said pixel electrode and said gate signal line being filled with liquid crystal;

said pixel electrode and said gate having a corresponding gate source capacitance, C_{gs} ,

said pixel electrode and said opposing electrode having a corresponding liquid crystal capacitance, C_{lc} ,

said pixel electrode overlapping said gate signal line forming a corresponding storage capacitance, C_{sc} ,

differences in amplitude of the gate signals defining a gate pulse amplitude, ΔV_g ,

a total TFT leakage current flowing from said pixel electrode to said drain signal line until said TFT current is completely dissipated being defined as $\int I_{ds} dt$;

and variation of storage capacitance, C_{sc} , with distance from said gate signal line being defined as C_{sc}' , wherein:

$$C_{sc}' = [\{ (C_{gs})(\Delta V_g) - \int I_{ds} dt \} \{ C_{lc} + C_{sc} + C_{gs} \}] / \{ (C_{gs})(\Delta V_g) \} - (C_{lc} - C_{gs}).$$

Claim 16 (New): A liquid crystal display device as set forth in claim 10, wherein said pixels each correspond to an equivalent circuit comprising:

a drain coupled to a drain signal line, said drain signal line having a gate coupled to said gate signal line;

a source corresponding to said pixel electrode coupled to an opposing electrode disposed on a substrate, said pixel electrode having a gate coupled to said gate signal line, a gap portion between said opposing electrode and said nitride film between said pixel electrode and said gate signal line being filled with liquid crystal;

said pixel electrode and said gate having a corresponding gate source capacitance, C_{gs} ,

said pixel electrode and said opposing electrode having a corresponding liquid crystal capacitance, C_{lc} ,

said pixel electrode overlapping said gate signal line forming a corresponding storage capacitance, C_{sc} ,

differences in amplitude of the gate signals defining a gate pulse amplitude, ΔV_g ,

a total TFT leakage current flowing from said pixel electrode to said drain signal line until said TFT current is completely dissipated being defined as $\int I_{ds} dt$;

and variation of storage capacitance, C_{sc} , with distance from said gate signal line being defined as C_{sc}' , wherein:

$$C_{sc}' = [\{ (C_{gs})(\Delta V_g) - \int I_{ds} dt \} \{ C_{lc} + C_{sc} + C_{gs} \}] / \{ (C_{gs})(\Delta V_g) \} - (C_{lc} - C_{gs}).$$

Claim 17 (New): A liquid crystal display device having a liquid crystal display panel, said liquid crystal display panel comprising:

a plurality of pixels which are disposed in a matrix having rows and columns and each of which has at least a thin film transistor (TFT) and a pixel electrode, each said pixel having an opening defining an aperture ratio;

a plurality of gate signal lines which extend from a gate signal input portion disposed along a side of said liquid crystal display panel and each of which is coupled with said TFT's in a row of said matrix;

auxiliary capacitor portions each additionally coupled with a pixel electrode of one of said pixel, the width of said gate signal line becomes narrower and thereby capacitance of said auxiliary capacitor portions becomes smaller as the distance from said gate signal input portion becomes larger,

the aperture ratio increasing as the capacitance of said auxiliary capacitor portions becomes smaller;

capacitance of each of said auxiliary capacitor portions being determined by an area of an opposing portion between a pixel electrode of a pixel and a gate signal line coupled with an adjacent pixel via an interlayer insulating film between said pixel electrode and said gate signal line;

said pixels each corresponding to an equivalent circuit comprising:

a drain coupled to a drain signal line, said drain signal line having a gate coupled to said gate signal line;

a source corresponding to said pixel electrode coupled to an opposing electrode disposed on a substrate, said pixel electrode having a gate coupled to said gate signal line, a gap portion between said opposing electrode and said nitride film between said pixel electrode and said gate signal line being filled with liquid crystal;

said pixel electrode and said gate having a corresponding gate source capacitance, C_{gs} ,

said pixel electrode and said opposing electrode having a corresponding liquid crystal capacitance, C_{lc} ,

said pixel electrode overlapping said gate signal line forming a corresponding storage capacitance, C_{sc} ,

differences in amplitude of the gate signals defining a gate pulse amplitude, ΔV_g ,

a total TFT leakage current flowing from said pixel electrode to said drain signal line until said TFT current is completely dissipated being defined as $\int I_{ds} dt$;

and variation of storage capacitance, C_{sc} , with distance from said gate signal line being defined as C_{sc}' , wherein:

$$C_{sc}' = [\{ (C_{gs})(\Delta V_g) - \int I_{ds} dt \} \{ C_{lc} + C_{sc} + C_{gs} \} / \{ (C_{gs})(\Delta V_g) \} - (C_{lc} - C_{gs})].$$